

In the Claims

- 1 1. (currently amended) A method for transmitting an input stream of data
- 2 symbols in a multiple-input/multiple-output wireless communications
- 3 system, comprising:
 - 4 demultiplexing the input stream into M substreams;
 - 5 adaptively modulating and coding each of the M substreams to a
 - 6 coded substream;
 - 7 space-time transmit diversity encoding a first of the M coded
 - 8 substreams into two space-time transmit diversity encoded output
 - 9 substreams, one space-time transmit diversity encoded output substream to
 - 10 be transmitted by a corresponding one of two transmit antenna;
 - 11 demultiplexing each output substream into a plurality demultiplexed
 - 12 output streams;
 - 13 multiplying each of the plurality of demultiplexed output streams by
 - 14 an orthogonal variable spreading factor;
 - 15 adding the demultiplexed output bitstreams, for each ouput stream,
 - 16 after multiplication into a summed output stream corresponding to each
 - 17 output stream;-and
 - 18 multiplying each summed output stream by a scrambling code. code:
 - 19 and
 - 20 transmitting directly each other coded substream by a corresponding
 - 21 single transmit antenna.

1 2. (original) The method of claim 1 further comprising:
2 feeding back, from a receiver, channel conditions of an associated
3 channel for each transmit antenna.
4 selecting a maximum data rate and a modulation for each substream
5 based on the channel conditions.

1 3. (original) The method of claim 2, in which the channel conditions
2 measure a signal to interference plus noise ratio of the output streams
3 received in the receiver.

1 4. (original) The method of claim 1, in which the adaptive modulating and
2 coding, further comprises:
3 coding each substream;
4 interleaving each coded substream; and
5 symbol mapping each interleaved substream.

5. (cancelled)

1 6. (original) The method of claim 1, further comprising:
2 space-time transmit diversity encoding each of a subset of the M
3 coded substreams into two space-time transmit diversity encoded
4 substreams, one space-time transmit diversity encoded substream to be
5 transmitted by a corresponding one of two transmit antenna; and
6 transmitting directly each other of the M coded substream not
7 included in the subset by a corresponding single transmit antenna.

1 7. (original) The method of claim 2, further comprising:
2 selecting the number M of substreams based on the channel condition.

1 8. (currently amended) An apparatus for transmitting an input stream of data
2 symbols in a multiple-input/multiple-output wireless communications
3 system, comprising:

4 $M+1$ transmit antennas;
5 a demultiplexer configured to demultiplex the input stream into M
6 substreams;

7 M means for adaptively modulating and coding each of the M
8 substreams to a coded substream;

9 means for space-time transmit diversity encoding a first of the M
10 coded substreams into two space-time transmit diversity encoded
11 substreams, one space-time transmit diversity encoded substream to be
12 transmitted by a corresponding one of two transmit antenna;

13 means for demultiplexing each output stream into a plurality
14 demultiplexed output streams;

15 means for multiplying each of the plurality of demultiplexed output
16 streams by an orthogonal variable spreading factor;

17 means for adding the demultiplexed output streams, for each ouput
18 stream, after multiplication into a summed output stream corresponding to
19 each output stream;

20 means for multiplying each summed output stream by a scrambling
21 code; and

22 means for transmitting directly each other $M-1$ coded substream by a
23 corresponding single transmit antenna.